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Program Manual for Estimating Use and Related Statistics on Developed Recreation Sites

by

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and

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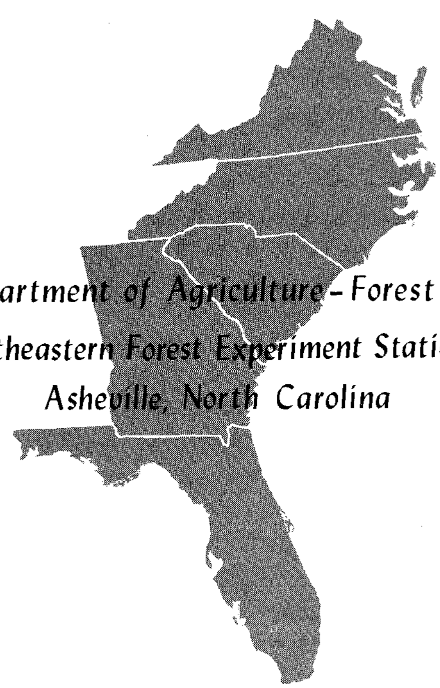

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by

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Introduction

Use and use-related information is essential to the planning, management, and operation of developed recreation sites. This information is needed to establish schedules for visitor information programs and trash disposal and to determine access requirements and maintenance needs. Estimates of use have immediate utility in identifying trends and patterns which are important in determining what activity demands are and what facilities will be required to support them. Also, consistently high use estimates may warn of dangerous peak loads having severe and irreversible biological impacts which may require immediate attention.

While the immediate utility of good use information is important, its greatest significance lies in formulating long-range planning and management goals. For instance, consistently estimating use below design capacity may indicate faulty design aasumptions and could possibly show that better information is needed in locating developed sites, that the mix of facilities might be improved, or that development toward a different experience leve1 should be considered. Use information is helpful in predicting depreciation rates of both facilities and the natural environment. Use data, if reliable and widespread, will permit systematic area planning rather thán piecemeal planning of individual places, and they can form the basis of long-term budget preparation.

Recognizing the essential nature of such information, researchers have developed a wide and successful variety of techniques for developing use estimates and associated measures of error for developed sitès (1, 9, 10) and for widely dispersed areas (2, 4, 5).

One of the more popular techniques has been described by James (3) and has been applied on more than 800 developed sites within National Forest lands. Much of the popularity of this technique stems from its use in the USDA Forest Service's Recreation Information Management (RIM) program (7)--a computer-oriented approach to the accumulation, storage, retrieval, and display of information about people, places, and things (8). Part of the emphasis in RIM has been directed, toward a broad sampling effort designed to introduce a large segment of managers to statistically founded approaches for use estimation.

The essence of this technique is simple linear regression whereby counts of people entering, people engaging in a variety of activities, and equipment in use serve as dependent variables and are regressed against metered counts from traffic counters or water meters (6) and which serve as the independent variable. The data from which the regression equations result are generated from a random selection of sample days. The recommended number of 12 sample days has usually proved sufficient for developing equations which yield season-long estimates well within a precision level of ±25 percent at the 67-percent level of probability.

For each of these 12 sample days, an observer is required on the site at 0900 (military time) to record the initial meter reading for that day. Following this, the observer stands at the site entrance from 0900 to 0915 and records the number of people entering the site during this interval. After this visit count is made, the observer travels through the site making a count of the number of people and recording the activity in which they are engaged. This procedure is followed for 12 hours on each sample day so that the last observations are made during the interval from 2000 to 2100. For each of these 12 sampling rounds, this approach attributes 1 hour of recreation use to each person engaged in recreation activity and estimates hourly visits by multiplying by 4 the observations in each 15-minute visitor-count interval. During the late afternoon and evening rounds, the observer tallies the number of people using each facility grouping so he can estimate the number of people expected to use the site overnight. Twelve hours of recreation use is attributed to each overnight user. The observer's last task is to return to the site at 0900 on the morning following the sample day to record the metered count. The difference between this reading and the reading recorded at the beginning of the sample day provides a value for the independent variable, and the sums of the hourly observations for visits and use by activity provide values for the dependent variables.

This procedure can be effectively applied on single sites or on two or more contiguous sites (called complexes) that lend themselves to common sampling. Also, it can be used on most developed sites where the independent variable can be completely metered over the period for which estimates are desired. Generally, estimates are developed for that part of the year when the greatest use is expected, usually from late spring until Labor Day. Estimates can be generated for an entire year, but stratification of the year into high- and low-use seasons usually results because of the excessive variability in use on most sites.

The technique has been encouraged in RIM because it has the flexibility for application on a variety of developed sites and because it could easily be extended to provide other information, such as visitor origin, occupancy rates, and daily-use patterns. Its increased application has fostered interest not only within the Forest Service but among outside parties as well. The growing interest in this technique has been accompanied by a corresponding increase in requests for programing and documentation. This manual is intended to meet these demands and ahould be used in conjunction with an earlier publication on the technique (3). Most of the programs and documentations presented here have been expanded and generalized from materials developed at the RIM Data Processing Center, Forestry Sciences Laboratory, Athens, Ga. These programs are naturally oriented toward application within the administrative framework of the National Forest system, but key points in all programs are indicated so they can be easily modified to fit any organization's needs.

Program USEST is designed to give season-long estimates and error terms for visits (actually an estimate of entries and not truly a visit estimate), visitor-days of use[1] for each of 12 activities, total visitor-days of use, and amounts of overnight equipment in use by type, i.e., auto, tent, or trailer. Program POC provides an analysis of the rates of occupancy of sampled picnic grounds and campgrounds. Program USPAT is designed to provide managers with a better idea of the pattern of use exhibited by sampled sites. Program ORGIN develops indicators of visitor origin and enables managers to become more familar with the clientele with which they are dealing.

These programs are all written in the Fortran IV compiler source language. They were developed for execution on IBM 7094 hardware and are operational for that system in IBSYS version 13.[2] They can be easily adapted to any other system having a Fortran IV compiler.

Data Handling and Management

The nature of input data necessitates general comment relating to these programs. Exhibit 1 shows the sampling record which summarizes field information gathered daily; it indicates that 25 cards are required if entries are recorded in all fields (see Appendix 5a for format of input). Experience has indicated, however, that only in rare cases will all fields be filled, and the RIM Center has not required that cards be punched unless to record field entries.

[1]Recreation use which aggregates 12 person-hours. It may involve one person for 12 hours, 12 persons for 1 hour, or any equivalent combination of group use, continuing or intermittent.

[2]Use of trade, firm, or corporation names is for the information and convenience of the reader and does not constitute endorsement or approval by the U. S. Department of Agriculture of any product or service to the exclusion of others which may be suitable.

Exhibit 1

CARD

USDA-FOREST SERVICE SAMPLING RECORD DEVELOPED RECREATION SITES (DOUBLE SAMPLE TECHNIQUE) *(Ref: FSH 2311.71)* PART I - DAILY SUMMARY	A. card no. (1-2) 01	B. region no. (3-4)	C. forest no. (5-6)
	D. dist. no. (7-8)	E. principal site no. (9-12)	kind (13-15)
	F. set no. (16-17)	G. principal site name (18-58)	

TRAFFIC/WATER METER READINGS	STATION 1	STATION 2	STATION 3	STATION 4
0900 HOURS ON SAMPLE DAY				
0900 HOURS ON NEXT DAY				
24 HOUR DIFFERENCE	(59-63)	(64-68)	(69-73)	(74-78)

CARDS 2-13

TIME OF DAY	VISITS tallied 15 min./hr. at 1 entrance (18-22)	NO. OF PERSONS ENGAGED IN COMPONENT ACTIVITIES: 43.1 picnicking (23-27)	41.1 camping (gen.) (28-32)	21.0 team sports (33-37)	22.1 swimming bathing (38-41)	22.2 & .3 water sports (42-45)	boat launch: 12.0 power (46-49)	boat launch: 15.0 non-power (50-53)	1.3 spectator sports (54-57)	visitor service: 81.1 & .2 exhibits talks (58-61)	visitor service: 81.3 & .4 tours (62-65)	1.1 view scenery (66-69)	other specify activity code (74-76) (70-73)
0900													
0915													
1000													
1015													
1100													
1115													
1200													
1215													
1300													
1315													
1400													
1415													
1500													
1515													
1600													
1615													
1700													
1715													
1800													
1815													
1900													
1915													
2000													
2015													

CARD 14

TIME OF DAY	FACILITY GROUPINGS BY PERCENT OF DESIGNED/CONST. CAPACITY UTILIZED — NO. OF FACILITY GROUPINGS — AT OR BELOW LOWER LIMIT: vacant	"gear" only	below lower limit	within limits	ABOVE UPPER LIMIT: less than 25% above	25% to 75% above	more than 75% above
1215	(18-20)	(21-23)	(24-26)	(27-29)	(30-32)	(33-35)	(36-38)
1815	(39-41)	(42-44)	(45-47)	(48-50)	(51-53)	(54-56)	(57-59)

OVERNIGHT USE (Post from 2015 round and/or supplemental information

NUMBER OF OVERNIGHT CAMPERS	TYPES OF OVERNIGHT EQUIPMENT IN USE (no. of)		
A. persons (60-64)	B. auto (65-67)	C. tent (68-70)	D. trailer (71-73)
E. observer	F. date of sample month (74-75)	day (76-77)	yr. (78-79)

2300-40 (1 l-70)

Exhibit 1 (continued)

PART II VEHICLES BY STATE OF ORIGIN	INSTRUCTIONS: Completo for each sample doy. Tally vehicles on-site during the 1215 & 1815 rounds.

STATE OF ORIGIN

STATE NO. (18-19)	STATE NAME	NO. OF VEHICLES ON SITE 1215 HOURS (20-23)	1815 HOURS (24-27)	STATE NO. (18-19)	STATE NAME	NO. OF VEHICLES ON SITE 1215 HOURS (20-23)	1815 HOURS (24-27)
1	AL			31	NB		
2	AK			32	NV		
4	AZ			33	NH		
5	AR			34	NJ		
6	CA			35	NM		
8	CO			36	NY		
9	CT			37	NC		
13	GA			41	OR		
15	HI			42	PA		
16	ID			44	RI		
17	IL			45	SC		
18	IN			46	SD		
19	IA			47	TN		
20	KS			48	TX		
21	KY			49	UT		
23	ME			51	VA		
24	MD			53	WA		
25	MA			54	WV		
26	MI			55	WI		
27	MN			56	WY		
28	MS			72	PR		
29	MO			99	UNDIFF.		
30	MT						

PART III SEASONAL SUMMARY OF PERTINENT INFORMATION	INSTRUCTIONS: Complete only once for the sampling season. Entries not required for blwk C unless more than one site is included in the sample.	A. set no. (16-17 9(

B. SAMPLING TECH. (1 .1 for single sites . 1.2 for site complexos) (18-19)

C. OTHER SITES INCLUDED IF A SAMPLING COMPLEX

no. (20-23)	kind (24-26)	no. (27-30)	kind (31-33)	no. (34-37)	kind (38-40)	no. (41-44)	kind (45-47)

D. SEASON CALIBRATED

calibration season began (48-49) (50-51) (52-53) mo. day yr.

calibration season end (54-55) (56-57) (58-59) mo. day yr.

total doy. in season (60-62)

E. TOTAL NUMBER OF FACILITY GROUPINGS (63-65)

F. TOTAL NO. OF SITE ENTRANCE ROADS (66)

G. TOTAL SEASONAL METERED COUNT ALL STATIONS (67-75)

(If two counters operated at one station, include the average count or the count of the most reliable counter.)

GPO 901-239

Because all programs in this documentation anticipate a complete set of 25 cards for each daily sampling record, a pre-edit of card input is required to insure that "dummy" cards are substituted for missing ones. At the RIM Center this is accomplished by machine edit of the input, but users of these programs who will not be processing large volumes of data can more easily insure the completeness of data sets by hand edit. This edit should insure that 25 cards are included in each set and that each card contains, at a minimum, data that will completely identify the sample. This identifying information is found in columns 3-17, with 3-15 used to identify the site and 16-17 used to identify each set of data unique to a particular sampling record. Set numbers run consecutively, with set number 1 assigned to the first sample day, set number 2 assigned to the second sample day, etc. The one exception to this scheme is card 25 of the last set, which is assigned set number 99 to indicate that it is the last card of the last set.

With particular regard to program USEST, experience in RIM has indicated a number of troublesome areas that should be edited carefully before data are processed. The entries in cards 2-13 should be carefully checked to see that all are right-justified. Failure to detect such errors in these cards will result in activity and total use estimates that are much too high. Similar incorrect estimates will result from the same kind of error in fields relating to overnight equipment in card 14. Probably the most common error is found in the field for recording the total seasonal meter count in card 25, set 99. This error obviously results in incorrect output and is the first place that should be reviewed if many estimates seem unreasonable. Note that punch space is provided on card 1 for as many as four different metered counts, shown as stations in exhibit 1. This allows for sampling places having as many as four entrances, and those sampling records showing entries for stations 1, 2, and 3 should show a corresponding total of three site entrance roads on card 25.

Program POC requires that the entries in card 14 showing facility grouping occupancy at 1215 and 1615 must equal the total number of facility groupings shown in card 25. Data serving as input to program USPAT are essentially edited in preparation for running USEST. Program ORGIN requires completion of part II, exhibit 1.

Program USEST

This program uses linear regression techniques to establish the relationship between some form of metered count (independent variable) and number of persons observed on the site and overnight equipment in use to estimate visitor-day use by activities, amount of overnight equipment in use by types, and recreation visits (dependent variables). The regression techniques employed, except for minor variations, can be found in any sound text covering statistical methods. Variations worthy of note are discussed on the following page.

First, the familiar regression equation derived from sample data gathered on a daily basis reads:

$$\hat{y}_{ij} = a_j + b_j x_i \tag{1}$$

and may be employed to estimate daily use on a given site. The components of this equation are defined as:

$\hat{y}_{ij}$ = estimate of dependent variable j (total use, visits, amount of overnight equipment in use, etc.) for the i^{th} day.

a_j = estimate of intercept for dependent variable j.

b_j = estimate of slope for dependent variable j.

x_i = metered count for day i.

For season-long estimates, however, the equation takes the form

$$\hat{T}_j = a_j(N) + b_j(X_s) \tag{2}$$

where

$\hat{T}_j$ = season-long estimate for the j^{th} dependent variable.

N = total number of days in the use season.

X_s = season-long axle count.

Notice that N daily 'estimates could be calculated by nubstituting N daily axle readings (if available) for x in equation (1). The sum of these N estimates is equivalent to the $\hat{T}$ estimate computed by equation (2).

Second, in the formula for the standard error of the estimate $\hat{T}$ given by

$$S_{\hat{T}} = N \sqrt{\frac{\text{Residual SS}}{n(n-2)} \left(1 + \frac{1}{n}\right) \left(\frac{N-n}{N}\right)}$$

the term $\left(\frac{N-n}{N}\right)$ is a correction for the finite population for which the estimate is developed.

In exhibit 1 note that ll activities have been preselected and that there is provision for any one additional activity which might be significant on the site being sampled. The unspecified activity is to be written in by the observer and must remain the same throughout the sampling period. Output is not produced for those activities showing no observed use or for those so correlated to produce negative use estimates. The ll preselected activities are labeled through use of a Selected Activity

Name and Code Deck (Appendix 5b). This deck is the first of the data to be read into the computer and immediately follows the program and subroutines.

Labeling for the unspecified activity is achieved through use of subroutine LOADAK, which reads activity names and codes from a general activity name and code deck (Appendix 5c) and stores them so they may be easily retrieved according to the activity code entered on the Daily Sampling Record before printing. Subroutines are used for labeling in several other instances in this program. In addition to storing activity names and codes, subroutine LOADAK performs a similar function for site kind names and codes which are read from a general kind name and code deck (Appendix 5c). Subroutines DIST and FOR are used for reading and storing Ranger District names and Forest names (Appendices 5d and 5e), and subroutine GETSUB is used to retrieve this information before printing. All similar labeling achieved in the following programs employs these same subroutines, which are described more completely in subsequent sections and are listed in Appendix 4.

A complete listing of program USEST is shown in Appendix 2a, and a complete illustration of deck setup is shown in Appendix 3a. Exhibit 2 is an example of the output from program USEST. Appendix la lists definitions of variable names used in USEST and all other programs. Appendix 1b lists definitions of variable names used in all supporting subroutines.

Program POC

The results of this analysis measure the degree of occupancy of campground and picnic ground units and should be interpreted as indications of trends and apply only to the sample days involved, since no statistical inferences are made from the data. No inference should be attempted because of the high variability of the basic data.

Input for the program is the number of facility groups classified in seven categories (card 14, exhibit 1) including:

1. Vacant.
2. Occupied by gear only.
3. Occupied below design capacity.
4. Occupied within design capacity.
5. Occupied from O-25 percent above upper limit of capacity.
6. Occupied from 25-75 percent above the upper limit of capacity.
7. Occupied more than '75 percent above the upper limit of capacity.

This information is collected twice daily at 1215 and 1815.

Exhibit 2

USE SAHPLING ANALYSIS WITH STATISTICS FOR CCMPUTING ESTIHATES IN SUCCEEDING YEARS

REGION NO 4 DAYS IN SEASON= 71 TOTAL METERED COUNT= 8941

FOREST NO 9 FOREST NAME HUMBOLDT N F

DISTRICT NO 4 DISTRICT NAME LAMOILLE R D

SITE ND 120 SITE NAME THOMAS CANYON

SITE KIND 411 CAMPGND- FAMILY TYPE

OTHER SITES INCLUDED SITE NO	KIND
0	C
0	0
0	C
0	0

VISITOR-DAY USE INFORMATION

ACTIVITY	REGRESSION A	COEFFICIENTS 8	ACTIVITY COOE	VISTOR-OAYS USE	ERROR-TERH (PERCENT)
PICNICKING	2.9C	C.0402	431	565.8	24.6
DAY CAMPING	5.79	0.0684		1023.1	11.5
NIGHT CAMPING	16.82	C.0762		1876.1	12.5
CAMPING ALL	22.61	0.1447	411	2899.2	11.4
TOTAL	25.52	C. 1849		3465.1	12.8

OTHER,RELATED INFORMATION

	REGRESSION A	COEFFICIENTS 8	ESTIMATED NO	ERROR TERM (PERCENT)
VISITS	38.22	0.2588	5027.7	13.3
OVERNIGHT EQUIPMENT				
AUTO	2.42	-0.0062	116.7	37.0
TENT	0.66	0.0117	151.7	15.8
TRAILER	1.96	0.0212	328.5	14.4

Each set of data (data for a given site for a particular sample day resulting from individual sampling records) is first stratified by weekdays and weekends/holidays through use of a built-in calendar. The calendar (Appendix 5f) is a deck of cards containing the dates of all weekends and holidays for the season of use and must be changed each year to reflect the correct weekend/holiday dates. Once stratified, the categorized data are accumulated over all sets of data. Final output is next calculated and appears as the average number of groupings occupied and percentage of total facility groupings by category (weekday and weekend/holiday) by strata for both times of day. A listing of this program is shown in Appendix 2b, and a deck setup is shown in Appendix 3b. Exhibit 3 is an example output from program POC.

Program USPAT

This program analyzes sample data resulting in indicators of patterns of use, particularly as it occurs by time of day. Again, no statistical inference should be drawn with respect to use patterns, and the results from this program are valid only for those sample days on which the information was collected.

Input to this program is observed use by time of day (0915 through 2015 and overnight campers) for individual activities. Input is stratified by weekdays and weekends/holidays, then summed over all activities to yield use figures for each time of day. Averages are determined after compilation of all data. Subsequently, these averages are divided by the "PAOT capacity"[3] of the site or complex to generate measures of the percentage of capacity used.

A listing of this program is shown in Appendix 2c, and a deck setup is shown in Appendix 3b. Exhibit 4 is an example output of program USPAT.

Program ORGIN

This program develops indicators of the origin of users of the site. Results are in the form of average number of cars by state, average number of cars per sample day, and percentages by states.

Input is the number of cars by states at two times of day (1215 and 1815). These data also are first stratified by weekdays and weekends/holidays with a built-in calendar (Appendix 5f) which must be changed each year to reflect the correct dates. All data for each site are summed and then divided by number of sample days to yield the average number of cars on the site per sample day. The total number of cars by states divided by the total number of cars for all states gives percentages by states. Other results include a total of all averages by states per day to

[3] An instantaneous measure of the number of people who can occupy a recreation place at one time.

Exhibit 3

ANALYSIS OF RECREATION USE DATA FOR SITES STATISTICALLY SAMPLED IN CY 1969

CAMP AND PICNIC UNIT OCCUPANCY*

REGION 4 FOREST 9 HUMBOLDT N F DISTRICT 6 ELY R D

SITE NAME AND KIND	SITE NO.		OCCUPANCY OF UNITS AS RELATED TO DESIGN CAPACITY VACANT	GEAR ONLY	8 E I O R LIMITS	WITHIN LIMITS	0-25 ABOVE	25-75 ABOVE	OVER 75 ABOVE	TOTAL
LEHMAN CREEK	60 .0									
CAMPGND-FAMILY TYPE SINGLE SITES										
UNITS OCCUPIED AVE. WEEKDAY		1215	16.4	0.4	0.0	10.1	0.0	0.0	0.0	27.0
PERCENT OCCUP IED			60.8	1.6	0.0	37.6	0.0	0.0	0.0	
		1815	13.4	0.1	0.0	13.4	0.0	0.0	0.0	
PERCENT OCCUP IED			49.7	0-S	0.0	49.7	0.0	0.0	0.0	
UNITS OCCUPIED AVE.SAT/SUN/HOL		1215	18.6	1.4	0.8	5.8	0-1)	0.0	0.0	27.0
PERCENT OCCUPIED			68.9	5.2	3.0	21.5	t-5	0.0	0.0	
		1815	18.0	0.8	1.2	7.0	0.0	0.0	0.0	
PERCENT OCCUP IED			66.7	3-0	4.4	25.9	0.0	0.0	0.0	

*THIS ANALYSIS FOR SAMPLE DAYS ONLY, NOT FOR THE ENTIRE SAMPLE SEASON

Exhibit 4

ANALYSIS OF RECREATION USE DATA FOR SITES STATISTICALLY SAMPLED IN CY 1969

AVERAGE NUMBER OF VISITORS RECORDED BY TIME OF DAY*

REGION 4 FOREST 9 HUMBOLDT N F DISTRICT 6 ELY R D

SITE NO 60.0 SITE NAME LEHMAN CREEK SITE KIND CAMPGND-FAMILY TYPE SINGLE SITE CAPACITY(PAOT) 300.0

TIME OF DAY	SITE USE IN TERMS OF NUMBER OF VISITORS PRESENT			
	AVE.WEEKDAY	PRCNT CAPACITY	AVE.WKEND/HOL.	PRCNT CAPACITY
0915	36.6	12.2	22.0	7.3
1015	38.0	12.7	19.4	6.5
1115	42.4	14.1	22.0	7.3
1215	50.0	16.7	26.0	8.7
1315	49.4	16.5	27.0	9.0
1415	47.4	15.8	33.2	11.1
1515	47.0	15.7	24.0	8.0
1615	39.3	13.1	24.0	8.0
1715	42.1	14.0	23.0	7.7
1815	45.9	15.3	22.8	7.6
1915	52.1	17.4	28.8	9.6
2015	59.3	19.8	36.0	12.0
OVERNIGHT CAMPERS	57.7	19.2	32.4	10.8
AVE. TOTAL VISITOR HRS/CALENDAR DAY	1242.1		697.0	

*THIS ANALYSIS FOR SAMPLE DAYS ONLY, NOT FOR THE WHOLE SAMPLE SEASON give an average number of cars per day for the site. Results are calculated for weekdays and weekends/holidays as well as time periods 1215 and 18 15 on each sample day. Results of this program may be interpreted as indicators only, and no statistical inference should be made.

A listing and deck setup for program ORGIN is shown in Appendix 2d, and the deck setup is shown in Appendix 3c. Exhibit 5 displays example output from this program.

Subroutine LOADAK

The function of this subroutine is to read and store activity or kind names for retrieval. Input to this subroutine is either a general activity name and code deck or a general kind name and code deck, depending on which names are being stored. Formats for these decks are given in Appendix 5c. Because subroutine logic is the same for processing activity and kind information, only the procedures for storing activity names are given here.

As each card in the name deck is read, a counter variable NK is incremented by 1. The array KODES is indexed by the activity code just read and is assigned the value for NK generated at each execution of the read statement. Next, the array KLOD is indexed by NK and is assigned the value just read for activity code. Finally, the array NAMES is indexed by NK and stores the activity name just read. The procedure continues with NK being increased by 1 with each execution of the read statement until a blank card is read and signals a return to the main program.

As the subroutine returns to the main program, KODES, NAMES, NK, and KLOD are recognized by the main program as ACTS1, ACTS2, ACTS3, and ACTS4. When a specific activity name is to be retrieved, the variable NA is set equal to ACTS1 as indexed by the activity code in question. This sets NA equal to the count previously assigned to this activity by LOADAK. NA is then used as an index to ACTS2 in retrieving the proper activity name.

There are severa1 approaches for storing name data simpler than that described for LOADAK, as well as for other subroutines subsequently described, but the procedure involved in the subroutines described here has two advantages. First, this approach reduces the amount of memory that must be reserved for the storage of names. And second, it provides great flexibility in making changes in the name decks being stored. Program dimensions are such that names can be added, deleted, or changed without the need for any program changes, and program logic requires no particular order of the data decks.

Subroutines FOR and DIST

Subroutines FOR and DIST are employed to store Forest and District names for retrieval by subroutine GETSUB. Because the logic for subroutines FOR and DIST is the same, only subroutine FOR is described here.

Exhibit 5

ANALYSIS OF RECREATION USE DATA FOR SITES STATISTICALLY SAHPLEO IN CY 1969

VEHICLES BY STATE OF ORIGIN *

REGION 4 FOREST 9 HUMBOLDT N F DISTRICT 6 ELY R C

SITE NO 60.0 SITE NAME LEHMAN CREEK SITE KIND CAMPGND-FAMILY TYPE SINGLE SITE CAPACITY(PAOT) 300.

STATE NAME	WEEKDAYS AVE.NO.CARS TALLIED ON SAMPLE OAYS 1215	1815	PER CENT ALL CARS TALLIED ON SAMPLE DAYS 1215	1815	WEEKENC/HOLICAY AVE.NO.CARS TALLIEC ON SAMPLE DAYS 1215	1815	PER CENT ALL CARS TALLIEO ON SIMPLE OAVS 1215	1815
ALABAMA	0.0	0.1	0.0	1.1	0.0	0.0	0.0	0.0
CALIFORNIA	2.6	3.4	18.0	26.1	1.8	2.6	25.0	28.9
COLORADO	0.0	0.6	0.0	4.3	0.0	0.0	0.0	c.c
FLORIDA	0.1	0.3	1.0	2.2	0.0	0.0	0.0	C.0
GEORGIA	0.0	0.1	0.0	1.1	0.0	0.0	0.0	0.0
ILLINOIS	0.0	0.4	0.0	3.3	0.0	0.0	0.0	0.0
MICHIGAN	0.0	0.3	0.0	2.2	0.0	0.2	0.0	2.2
NEVADA	7.4	5.7	52.0	43.5	4.8	4.8	66.7	53.3
NEW MEXICO	1.0	1.1	7.0	8.7	0.0	0.0	0.0	C.0
UTAH	2.7	0.4	19.0	3.3	0.2	1.0	2.8	11.1
VERMONT	0.0	0.1	0.0	1.1	0.0	0.0	0.0	c.c
WASHINGTON	0.0	0.0	0.0	0.0	0.4	0.4	5.6	4.4
WISCONSIN	0.4	0.4	3.0	3.3	0.0	0.0	0.0	C.0
TOT ALL STATES	14.3	13.1	100	100	7.2	9.0	100	1C0

*THIS ANALVSIS FOR SAMPLE DAYS ONLY, NOT FOR THE WHOLE SAMPLE SEASON

After storage locations have been cleared, the first card in the Forest Name Deck (Appendix 5d) is read and includes Region number, coded as N1; Forest number, coded as N2; and Forest name, coded as NAME. Subsequently, a counter variable, NK, is assigned a unique number generated for each Forest. This unique number is determined by multiplying Region number by 100 and adding Forest number; e. g., the number 102 is Forest 2 of Region 1 and the number 1002 is Forest 2 of Region 10. Then the array NAMES, subscripted by NK, is assigned the Forest name just read. This procedure continues until a blank card is read to signa1 a return to the main program. When Forest and District names are not desired, two blank cards represent the Forest and District name decks.

After storage is complete and the subroutine returns control to the main program, the subroutine arguments KODES, NAMES, and NK are recognized by the main program as FORST1, FORST2, and FORST3 and are used in retrieving names by subroutine GETSUB.

Subroutine GETSUB

This subroutine functions to retrieve Forest and District names after their storage by subroutines FOR and DIST. When this subroutine is called to retrieve Forest names, the main program gives it values of FORST1, FORST3, NF, and 200 which it recognizes as KODES, NK, NPOINT, and NDEM. NDEM is used in GETSUB to dimension the array KODES which contains al1 unique Forest numbers assigned previously. With NK used as the termination point in a do loop, NSUB is set equal to the variable index of the do loop, and as NSUB is incremented it is used as an index for KODES. KODES (NSUB) is compared with NPOINT until they are equal. When this occurs, NSUB is returned to the main program and is the proper index to FORST2, the array containing Forest names. Should the do loop be satisfied before KODES (NSUB) equals NPOINT, a value of NK + 1 is assigned to NSUB which results in retrieval of a blank Forest name.

LITERATURE CITED

(1) Bury, Richard L., and Ruth Margolis
1964. A method for estimating current attendance on sets of campgrounds.. .a pilot study. Pac. Southwest For. & Range Exp. Stn., U. S. For. Serv. Res. Note PSW-42, 6 pp.

(2) Cushwa, Charles T., and Burd S. McGinnes
1964. Sampling procedures and estimates of year-round recreation use on 100 square miles of the George Washington National Forest. Twenty-Eighth North Am. Wildl. & Nat. Resour. Conf. Trans. 1963: 457-465.

(3) James, George A.
1966. Instructions for using traffic counters to estimate recreation visits and use on developed sites. USDA For. Serv. Southeast. For. Exp. Stn., 12 pp.

(4) ________ and Robert A. Harper
1965. Recreation use of the Ocala National Forest in Florida. Southeast. For. Exp. Stn., U. S. For. Serv. Res. Pap. SE-18, 28 pp.

(5) ________ and Robert K. Henley
1968. Sampling procedures for estimating mass and dispersed types of recreation use on large areas. Southeast. For. Exp. Stn., U. S. For. Serv. Res. Pap. SE-31, 15 pp.

(6) ________ and Gary L. Tyre
1967. Use of water-meter records to estimate recreation visits and use on developed sites. Southeast. For. Exp. Stn., U. S. For. Serv. Res. Note SE-73, 3 pp.

(7) USDA Forest Service
1967. RIM Handbook. FSH 2309.11, 192 pp.

(8) ________
1968. Recreation information management. A computer-oriented system for the management of information about people, places, and things over periods of time. In-Serv. Train. Guide, 127 pp.

(9) Wagar, J. Alan
1964. Estimating numbers of campers on unsupervised campgrounds. Northeast. For. Exp. Stn., U. S. For. Serv. Res. Pap. NE-18, 16 pp.

(10) ________
1969. Estimation of visitor use from self-registration at developed recreation sites. Intermt. For. & Range Exp. Stn., USDA For. Serv. Res. Pap. INT-70, 27 pp.

Appendix 1a

Definitions of Program Variable Names

ACTIVE	Array which stores preselected activity names.
ACTS1	Argument to subroutine LOADAK (see KODES, Appendix 1b).
ACTS2	Argument to subroutine LOADAK (see NAMES, Appendix 1b).
ACTS3	Argument to subroutine LOADAK (see NK, Appendix 1b).
ACTS4	Argument to subroutine LOADAK (see KLOD, Appendix 1b).
AY	Array containing all "a" regression coefficients used in the equations for visits, activity use and total use, and overnight facility-use.
BY	Array containing all "b" regression coefficients used in the equations for visits, activity use and total use, and overnight facility-use.
CAL	Array containing all dates of weekend days and holidays, used to determine when a sample day occurred. Data are read into this array from a card deck which must be updated annually.
CARD	Array containing count of people entering the site, numbers of people engaging in any of 12 activities (11 preselected and one selected by sampler), and the code of the activity selected by the sampler for each of 12 times of day (0900 through 2000).
CARS	Array containing numerical state codes and numbers of cars observed on the site, by state and time of day (1215 and 1815 hours).
CODE	Array used to store preselected activity codes.
DATE	Date sample was taken.
DISTR1	Argument to subroutine DIST (see KODES, Appendix 1b).
DISTR2	Argument to subroutine DIST (see NAMES, Appendix 1b).
DISTR3	Argument to subroutine DIST (see NK, Appendix 1b).
DISTRT	Variable name for District number.
DSUB	Argument to subroutine GETSUB (see NSUB, Appendix 1b).

ENT — Four-element array containing daily axle count (independent variable) for each site entrance.

ERRY — Array containing percent error of "y" estimates.

ESTY — Array containing regression estimates of "y" (visits and use).

FAC1 — Array used in reading the number of facility groupings occupied at six different occupancy levels at 1215 hours.

FAC2 — Array used in reading the number of facility groupings occupied at six different occupancy levels at 1815 hours.

FACGRP — Variable identifying the total number of facility groupings.

FMULT — Multiplier used to convert the instantaneous estimate of overnight visitors to an estimate reflecting total visitor presence over the 12 hours available for night use.

FOREST — Variable name for Forest number.

FORST1 — Argument to subroutine FOR (see KODES, Appendix 1b).

FORST2 — Argument to subroutine FOR (see NAMES, Appendix 1b).

FORST3 — Argument to subroutine FOR (see NK, Appendix 1b).

FSUB — Argument to subroutine GETSUB (see NSUB, Appendix 1b).

HAVE — Array containing the average number of cars observed per weekend/holiday sample for each state and by time of day (1215 and 1815 hours).

HAVIS — Average number of visitor-days per holiday-weekend sample.

HFAC1 — Array containing facility unit occupancy on weekends/holidays at 1215 hours. First used as a summary array and later as an array for average occupancy.

HFAC2 — Array containing facility unit occupancy on weekend/holidays at 1815 hours. First used as a summary array and later as an array for average occupancy.

HORIGIN — Array containing summary of numbers of cars, by origin (state) and time of day (1215 and 1815 hours) for weekends / holidays.

HPCAP — Array showing percentage of site capacity utilized, by time of day (1215 and 1815 hours) for weekends/holidays.

HPCNT — Percentage of average number of cars from all origins (states) for individual origins, by time of day (1215 and 1815 hours) for weekend/holiday samples.

HPERS — Array containing number of persons observed on the site on weekend/holidays, by time of day (1215 and 1815 hours). Used first as a summary area for persons observed by time of day and later to store the average number of persons by time of day.

HPOC 1 — Percentage of total facility units occupied at various occupancy levels on weekends/holidays at 1215 hours.

HPOC2 — Percentage of total facility units occupied at various occupancy levels on weekends/holidays at 1815 hours.

HTOT — Array containing average number of cars observed on the site, by time of day (1215 and 1815 hours) for weekends and holidays.

HTOVIS — Total number of visitor-days observed for the site for all weekend and holiday samples.

IACT — Variable name for write-in activity.

INDEX — Variable name for state number used as an index to the arrays WORIGIN and HORIGIN.

JL — Index used in finding amount points in the array CARS when totaling into the arrays HORIGIN and WORIGIN.

KIND1 — Argument to subroutine LOADAK (see KODES, Appendix 1b).

KIND2 — Argument to subroutine LOADAK (see NAMES, Appendix 1b).

KIND3 — Argument to subroutine LOADAK (see NK, Appendix 1b).

KIND4 — Argument to subroutine LOADAK (see KLOD, Appendix 1b).

KTECH — Array containing description of site from which information carne (single site or site complex).

MEANX — Average number of daily axle counts over all sample days.

MEANY — Average number of observations for all dependent variables.

NA — Identifies the order in which a particular activity name and code have been read and stored by subroutine LOADAK. Once identified, it is used as an index to array ACTS2 which contains activity names (see NK and NAMES, Appendix 1b).

NAME	Read area variable for site name.
NB LANK	Read area used to read past data not necessary to program.
ND	Argument to subroutine GETSUB used in retrieving District names. It identifies a unique code for each District (see NPOINT, Appendix 1b).
NEQUIP	Counts of the types of overnight equipment in use.
NF	Argument to subroutine GETSUB used in retrieving Forest names. It identifies a unique code for each Forest (see NPOINT, Appendix 1b).
NHD	Number of weekend/holiday days on which sample was taken.
NITCAM	Number of overnight campers (treated as a separate activity a.nd also added to total-day camping to derive a total camping estimate).
NK	Identifies the order in which a particular kind name and code has been read and stored by subroutine LOADAK. Once identified, it is used as an index to array KIND2 which contains kind names (see NK and NAMES, Appendix 1b).
NNN	Integer equivalent to TSDAYS, the number of days in the season of use.
NNXS	Integer equivalent to SAXLE, the season-long metered count.
NOPE RS	Array containing number of persons observed on site by the activity in which they are engaged.
NOROADS, NORODS	Number of site entrances.
NOSAMP	Number of sample days per site.
NOSITE	Counter variable to go to a new page after output for two sites has been printed per page.
NSD	Number of sample days.
NWD	Number of weekdays on which a sample was taken..
ODIS	See OREG.
OFOR	See OREG.
OKIND	Storage and print variable name for kind code of principal site.

ONAME	Storage area array for site name.
ONIT	Storage variable name for the number of overnight campers.
OREG	Storage and print variable names for Region, Forest, and District numbers in program 23.301. In programs 23.304-306 they are also used as compare variables for determining breaks to new pages of output.
OSITE	Storage and print variable name for principal site number.
OTECH	Storage variable name for technique number.
OTHERS	Storage area array for the numbers and kind codes of other sites included in the sample (ordinarily this occurs only for site complexes).
OTHSIT	Read area array for the numbers and kind codes of other sites included in the sample (ordinarily this occurs only for site complexes).
PAOT	Persons at one time--a measure of instantaneous capacity.
PKIND	Variable name for kind code of principal site.
PSITE	Read variable name for principal site number.
REG	Variable name for Region number in programs 23.304-306.
REGION	Variable name for Region number in program 23.301.
SAXLE	Storage area for season-long axle count.
SE	Array containing standard errors of estimates.
SET	Code number used to distinguish data yathered on one sample day from those gathered on another.
SITE	Variable name for principal site number in programs 23.304-306.
SMSQX	Sum of squared daily axle counts. It is the uncorrected sum of squares of the independent variable.
SMSQY	Array containing sample "y" observations for all variables squared for each sample day and then summed. This is the uncorrected sums of squares for the dependent variables.
SMX	Sum of daily axle counts over all sample days. It is the sum of the independent variable.

SMXY	Array containing daily axle count observations multiplied by sample "y" observations for al1 variables. It is the uncorrected sum of cross-products.
SMY	Array containing number of visitor-days by activity, total visitor-days, and total visit count over all sample days and is the sum of the dependent variables.
SN0	Site number in floating point to one decimal place.
SPXY	Array containing corrected sums of cross-products.
SSX	Corrected sum of squares for the independent variable.
SSY	Array containing corrected sums of squares for the dependent variables.
STE	Array containing state names.
TALLY	Counter variable for number of sites processed.
TDCNT	Total daily axle count (independent variable) for all site entrances.
TECH, TECHNO	Read variable name for technique. Indicates whether data resulted from a single site or a site complex.
TEST	Value used to initialize compare variables and to zero al1 summary points. This value is also used in signaling end of data.
TMOFDA	Data array at times of day (0915 through 2015 hours).
TNE	Variable name for number of entrances.
TNPERS	Array which first contains total number of persons by activity for each sample day. Total number of persons is subsequently transformed to visitor-days.
TODAYS	Total number of days in use season.
TSAXLE	Read variable name for season-long axle count.
TSDAYS	Storage variable name for number of days in the season.
WAVE	Array containing the average number of cars observed per weekday sample for each state and by time of day (1215 and 1815 hours).
WAVIS	Average number of visitor-days per weekday sample.

WFAC1	Array containing facility unit occupancy on weekdays at 12 15 hours. First used as a summary array, then as an array for average occupancy.
WFAC2	Array containing facility unit occupancy on weekdays at 1815 hours. First used as a summary array, then as an array for average occupancy.
WORIGIN	Array containing summary of number of cars, by origin (state) and time of day (1215 and 1815 hours) for weekdays.
WPCAP	Array showing the percentage of total site capacity being utilized, by time of day for weekday samples.
WPCNT	Percentage of the average number of cars from al1 origins (states) for individual origins, by time of day (1215 and 1815 hours) for weekday samples.
WPERS	Array containing the number of persons observed on the site on weekday samples, by time of day. Used first as a summary of al1 persons observed by time of day and later as average number by time of day.
WPOC1	Percentage of total facility units occupied at the various levels of occupancy on weekday samples at 1215 hours.
WPOC2	Percentage of total facility units occupied at the various levels of occupancy on weekdays at 1815 hours.
WTOT	Total number of cars observed on the site, by time of day (1215 and 1815 hours) for weekday samples.
WTOVIS	Total number of visitor-days observed for the site for al1 weekday samples.

Appendix 1b

Definitions of Subroutine Variable Names

KLOD	Array storing kind/activity codes and indexed by NK, the order on which the codes are loaded. Corresponds to ACTS4 or KIND4 of main program.
KOD	Kind/activity code read by subroutine LOADAK.
KODES	In subroutine LOADAK, an array which is indexed by kind/activity codes and stores NK, the order in which the codes are loaded. Corresponds to argument ACTS1 or KIND1 of main program. In subroutines DLST and FOR this array is indexed by NK and stores a unique code for each District or Forest. This code is subsequently used as a return point in subroutine GETSUB when retrieving Forest and District names. In this case, KODES corresponds to arguments FORST1 or DISTR1 in main program.
NAME	Kind/activity name read by LOADAK.
NAMES	Array storing kind/activity names, District names, or Forest names and indexed by NK, the order on which the names are loaded. Corresponds to ACTS2 or KIND2 of main program for LOADAK, DISTR2 for DIST, and FORST2 for FOR.
NDEM	Dimension of the array KODES used in GETSUB.. It is set at 200 when GETSUB is being used to retrieve Forest names and 900 when retrieving District names.
NK	Order on which codes and names are loaded. Corresponds to ACTS3 or KIND3 of main program for LOADAK, DISTR3 for DIST, and FORST3 for FOR.
NPOINT	A unique code for an individual Forest or District used in GETSUB for retrieval of Forest or District names.
NSUB	Index value for the array KODES in GETSUB. When terminated, GETSUB returns a particular value for NSUB which the main program recognizes as DSUB or FSUB, depending on whether GETSUB has been called in retrieving District or Forest names. This value is then used as an index for either array DISTR2 or FORST2.

Appendix 2a

Listing of Program USEST

```
PROGRAH   USES7
      DIMENSION NBLANK(10), CODE(17,2),ACTIV(17,4)
      DIUENSIDN KIND1(999),ACTS1(999),KIND2(60,6),A
     1CTS2(60,6),KIND4(60),ACTS4(60),FORST1(200),FORST2(200,4),DISTR1(90
     20),DISTR2(900,4),NAME(7),OTHSIT(8),ENT(4),CARD(12,14),       NEQUI
     3P(3),TNPERS(19),SMY(19),SMSQY(19),SMXY(19),MEANY(19),SPXY(19),SSY(
     419),BY(19),AY(19),ESTY(19),SE(19),ERRY(19),ONAME(7),OTHERS(8)
      INTEGER TEST,DISTR3,FORST3,ACT3,FSUB,DSUB,FORST1,FORST2,DISTR1,DI
     1STR2,REGION,FOREST,DISTRT,PSITE,PKIND,OTHSIT,TECHNO,DAY,YEAR,OKIND
     2,OSITE,ODIS,OFOR,OREG,ONAME,OTHERS,OTECH,ACTIV,CODE,
     5ACTS1,ACTS2,ACTS3,ACTS4
      REAL NEQUIP
      REAL MAXDIF,MINDIF
      REAL NITCAM,NOSAMP,MEANX,MEANY
C
C READ FIXED ACTIVITY CODES AND NAMES
C
      DO 120 I=1,17
      READ(5,100) (ACTIV(I,J),J=1,4),(CODE(I,K),K=1,2)
  100 FORMAT(3A6,A3,A6,A2)
  120 CONTINUE
C LOAD ACTIVITY ANO KINOS INTO MEMORY
C
      CALL LOADAK(KIND1,KIND2,KIND3,KIND4)
C
      CALL LOADAK(ACTS1,ACTS2,ACTS3,ACTS4)
C
C INITIAL1ZE CHECK ANO SUMMARY POINTS
C
      TEST=1
      TALLY=0
      SUMDIF=0
      MAXDIF=0
      MINDIF=99999.9
      KIND3=0
      DISTR3=0
      FORST3=0
      ACTS3=0
      FSUB=1
      DSUB=1
      TNENT=0
      NSD=0
      SMX=0
      SMSQX=C
      TDCNT=0
      DO 10 I=1,21
      SMY(I)=0
      SMSQY(I)=0
      SMXY(I)=0
      TNPERS(I)=0
   10 CONTINUE
      NOSAMP=0
C
C LOAD FOREST AND DISTRICT NAMES
C
      CALL FDR (FORST1,FORST2,FORST3)
      CALL DIST(DISTR1,DISTR2,DISTR3)
C
C REA0 AREA FOR COMPLETE SET OF DATA
C
   20 CONTINUE
   22 READ(5,21) REGION,FOREST,DISTRT,PSITE,PKIND,(NAME(I),I=1,7),(ENT(I
```

```
      1),I=1,4)
       IF (REGION.EQ.99) GO TO 880
   2 1  FORMAT(2X,3I2,I4,I3,2X,6A6,A5,4F5.0)
       DO 23 I=1,12
       READ(5,24) (CARD(I,J),J=1,14)
   24 FORMAT (17X,4F5.0 ,9F4.0,F3.0)
   23  CONTINUE
       READ(5,25)   NITCAM,(NEQUIP(I),I=1,3)
   2 5  FORMAT(59X,F5.0,3F3.0)
       DO 28 I=1,10
       READ(5,27) NBLANK(I)
   27 FORMAT(I2)
   28  CONTINUE
       READ(5,26) TECHNO,(OTHSIT(J), J=1,8),TODAYS,TNE,TSAXLE
   2 6  FORMAT(17X,I2,4( I4,I3),12X,F3.0,3X,F1.0,F9.0)
       IF ITEST.EQ.I )GO TO 800
C
C CHECK FOR NEW SITE
C
   30 IF(OKIND.NE. PKIND)GO TD 600
       IF(OSITE.NE.PSITE)GO TO 600
       IF(ODIS.NE.D ISTRT)GO TO 600
       IF(OFOR.NE.FOREST)GO TO 600
       IF(OREG.NE.REGION)GO TO 600
       DO 804 J=1,8
       OTHERS(J)=IABS(OTHSIT(J))
  804  CONTINUE
       DO 32 I=1,19
       TNPERS (I) =0
   32  CONTINUE
       IF(TODAYS.GT.0.)TSDAYS=TODAYS
       TDCNT=0
C
C CONVERT DATA TO VISTOR DAVS
C   GENERATE SUMS,SUM O F  SQUARES,
C SUN DF CROSS PRDDUCTS
C
       DO 34 I=1,12
       DO 34 J=2,13
       TNPERS(J)=TNPERS(J)+CARD(I,J)
       IF(CARD(I,14).GT.0.) IACT=CARD1 Ir 14)
   34 CONT I NUE
       DO 36J=2, 13
       TNPERS(J)=TNPERS(J)/12.
   36  CONTINUE
       TNPERS(14)=NITCAM
       TNPERS 115 )=TNPERS(3)+NITCAM
       DO 35 I=2,14
       TNPERS116 )=TNPERS( 16 )+TNPERS( I)
   3 5 CONT INUE
       DO39 I=17,19
       TNPERS(I)=NEQUIP(I-16)
   3 9 CONTINUE
       NOSAMP=NOSAMP+1.
       DO 37 I=1,4
       IF(ENT(I).GT.0.)TNENT=TNENT+1.
       TDCNT=TDCNT+ENT( I)
   3 7 CONTINUE
       DO 40 I=1,12
       TNPERS(1)=TNPERS(1)+CARD( I,1)*4.*TNENT
   40 CONT I NUE
       TNENT=0
```

```
      SMX=SMX+TDCNT
      SMSQX=SMSQX+TDCNT**2
      DO 42 I=1,19
      SMY(I)=SMY(I)+TNPERS(I)
      SMSQY(I)=SMSQY(I)+TNPERS(I)**2
      SMXY(I)=SMXY(I)+TDCNT*TNPERS(I)
   42 CONTINUE
      IF (TSAXLE.GT.O.)SAXLE=TSAXLE
      GO TO 20
C
C GENERATE MEANS,CORR. SUM SOUARES ANO CROSS PRODUCTS
C A ANO B COEFF ICI ENTS , ST ANDARD ERROR AND ERROR TERMS
C
  600 MEANX=SMX/NOSAMP
      SSX=SMSQX-SMX**2/NOSAMP
      DO 602 I=1,19
      MEANY(I)=SMY(I)/NOSAMP
      SPXY(I)=SMXY(I)-(SMX*SMY(I)/NOSAMP)
      SSY(I)=SMSQY(I)-SMY(I)**2/NOSAMP
      BY(I)=SPXY(I)/SSX
      AY(I)=MEANY(I)-BY(I)*MEANX
      ESTY(I)=AY(I)*TSDAYS+BY(I)*SAXLE
      SE(I)=SQRT(((SMSQY(I)-AY(I)*SMY(I)-BY(I)*SMXY(I))/(NOSAMP*(NOSAMP-
     12. )))*(1.+1./NOSAMP)*((TSDAYS-NOSAMP)/TSDAYS))*TSDAYS
      ERRY(1)=(SE(I)/ESTYII))*100.
  602 CONTINUE
C
C WRITE AREA FOR DOUBLE SAMPLE
C
      NF=OREG*100+OFOR
      CALL GETSUB(FORST1,FORST3,NF,FSUB,200)
      ND=NF*100+ODIS
      CALL GETSUB(DISTR1,DISTR3,ND,DSUB,900)
      NK=KIND1(OKIND)
      NNN=TSDAYS
      NNXS=SAXLE
      WRITE(6,699)
  699 FORHAT(1H1,105H                                USE SAHPLING ANALYSIS WITH
     1STATISTICS FOR COMPUTING ESTIMATES IN SUCCEEDING YEARS)
      WRITE(6,700) OREG,NNN,NNXS
  700 FORMAT(1H0,16X,12HREGION NO    ,I2,19H     DAYS IN SEASON=,I4,25H
     1  TOTAL METERED COUNT=, I9,7X, 24HOTHER SITES INCLUDED      )
      WRITE(6,701)
  701 FORMAT(1H ,96X,16HSITE NO      KIND)
      WRITE(6,702)     OFOR,(FORST2(FSUB,I),I=1,4)
  702 FORMAT(1H ,16X,12HFOREST NO    ,I2,4X,13HFOREST NAME   ,3A6,A3)
      WRITE(6,703)(OTHERS(I),I=1,2)
  703 FORMAT(1H ,96X, I4,8X,I3)
      WRITE(6,704) ODIS,(DISTR2(DSUB,I),I=1,4),(OTHERS(I),I=3,4)
  704 FORMAT(17X  12HDISTRICT NO t I2,4X, 15HDISTRICT NAME  ,3A6,A2,27X,
     1I4,8X,I3)
      WRITE(6,703)(OTHERS(I),I=5,6)
      WRITE(6,705) OSITE,(ONAME(I),I=1,6),(OTHERS(I),I=7,8)
  705 FORMAT(1H ,16X,10HSITE NO    t I4,4X, 11HSITE NAME   ,5A6,A1,20X,I4,8X
     1,I3)
      WRITE(6,706) OKIND,(KIND2(NK,I),I=1,4)
  706 FORMAT(1H0,16X,11HSITE KIND   ,I3,3X3A6,A3)
      WRITE(6,707)
  707 FORMAT(1H0,7X,27HVISITOR-DAY USE INFORMATION)
      WRITE(6,708)
  708 FORMAT(1H0,23X,8HACTIVITY,11X,23HREGRESSION COEFFICIENTS,4X,8HACTI
     1VITY ,7X,16HVISTOR-DAYS USE ,2X,10HERROR-TERM)
```

```
      WRITE(6,709)
  709 FORMAT(1H ,49X,1HA,10X,1HB,11X,4HCODE,27X,9H(PERCENT)//)
  721 DO 725 I=2,12
      IF(ESTY(I).LE.0. )GO TO 724
      WRITE(6,710) (ACTIV( I-1,J),J=1,4),AY(I),BY(I),(CODE(I-1,K),K=1,2),
     1ESTY(I),ERRY(I)
  724 IF(I.NE.3) GO TO 725
      IF(ESTY(14).GT.0.)WRITE(6,710) (ACTIV(13,J),J=1,4),AY(14),BY(14),(
     1CODE(13,K),K=1,2),ESTY(14),ERRY(14)
  710 FORMAT(1H ,16X,3A6,A3,4X,F11.2,2X,F11.4,4X,A6,A3,10X,F11.1,F11.
     11)
      IF(ESTY(15).GT.0.)WRITE(6,710) (ACTIV(14,J),J=1,4),AY(15),BY(15),(
     1CODE(14,K),K=1,2),ESTY(15),ERRY(15)
  725 CONTINUE
      DO 716 I=1,5
      WRITE(6,717)
  717 FORMAT(1H )
  716 CONTINUE
      IF(ESTY(13).EQ.0.) GO TO 730
      IF(IACT.LE.0.OR.IACT.GE.999) GO TO 730
      NA=ACTS1(IACT)
      IF(NA.EQ.0)GO TO 730
      WRITE(6,715)(ACTS2(NA,I),I=1,4),AY(13),BY(13),IACT,ESTY(13) ,ERRY(
     113)
  715 FORMAT(1H ,16X,3A6,A3,4X,F11.2,2X,F11.4,9X,I3,10X,F11.1,1X,F11.1)
  730 WRITE(6,710)(ACTIV(12,J),J=1,4),AY(16),BY(16),(CODE(12,K),K=1,2),
     1ESTY (16), EPRY(16)
      WRITE(6,718)
  718 FORMAT(///7X,25HOTHER,RELATED INFORMATION///43X,23HREGRESSION COEF
     1FICIENTS,22X,12HESTIMATED NO,3X,10HERROR TERM/50X,1HA,10X,1HB,42X,
     29H(PERCENT))
      WRITE(6,719) AY( 1),BY(1),ESTY(1),ERRY( 1)
  719 FORMAT(1H0,19X,6HVISITS16X,F11.2,2X,F11.4,23X,F11.1,   F11.1//)
      WRITE (6,720)
  720 FORMAT(1H,16X,19HOVERNIGHT EQUIPMENT)
      DO 735 I=17,19
      IF (ESTY(I ).LE.0. ) GO TO 735
      WRITE(6,722) (ACTIV( I-2,J),J=1,4), AY( I),BY(I ),ESTY(I),ERRY(I)
  722 FORMAT(20X,   3A6,A3,1X,F11.2,2X,F11.4,23X,F11.1,F11.1)
  735 CONTINUE
  BCC IF(TEST.LT.2)TEST=2
C
C COMPARE AREAS INITIALIZEO
C AND SUMMARY POINTS ZEROED
C
      OREG=REGION
      OFOR=FOREST
      ODIS=DISTRT
      OSITE=PSITE
      OKIND=PKIND
      DO 802I=1,6
      ONAME(I)=NAME(I)
  802 CONTINUE
      OTECH=TECHNO
      OTDAYS=TODAYS
      TNENT=0
      NOSAMP=0
      SMX=0
      SMSQX=0
      IACT=999
      DO 808I=1,19
      SMY(1)=0
```

Appendix 2a (continued)

```
      SMSQY(I)=0
      SMXY(I)=0
  808 CONTINUE
C
C CHECK FOR END OF DATA ANO
C ENDFILE AREA
      IF(TEST.EQ.3) GO TO 900
      GO TO 30
  880 TEST=3
      GO TO 600
  900 STOP
      END
```

Appendix 2b

Listing of Program POC

```
PROGRAH POC
      DIMENSION CAL(38),FORST1(200),FORST2(200,4),DISTR1(900),DISTR2(900
     1,4),KIND1(999),KIND2(60,6),KIND4(60),KTECH(2,2)
      DIMNSION NAME(7),NOPERS(12,14),FAC1(7),FAC2(7),CARS(10,18),WFAC1(
     17),WFAC2(7),HFAC1(7),HFAC2(7),WPOC1(7),WPOC2(7),HPOC1(7),HPOC2(7)
      REAL NOPERS,NORODS,NWD,NHD
      INTEGER CAL
      INTEGER REG,          SITE,SET,TECH,DATE,OREG,OFOR,ODIS,FORST1,FORS
     1T2,FORST3,DISTR1,DISTR2,DISTR3,FSUB,DSUB
      INTEGER FOREST,DISTRT
      DATA (KTECH(1,I),I=1,2)/6HSINGLE,6H SITES/
      DATA (KTECH(2,I),I=1,2)/6HSITE C,6HOMPLEX/
      00 2 I=1,37
      READ(5,1)CAL(I)
    1 FORMAT(I6)
    2 CONTINUE
      CALL LOADAK(KIND1,KIND2,KIND3,KIND4)
      CALL FOR(FORST1, FORST2,FORST3)
      CALL DIST(DISTR1,DISTR2,DISTR3)
      NWD=0
      NHD=0
      DO 3 I=1,7
      WFAC1(I)=0
      WFAC2(I)=C
      HFAC1(I)=0
      HFAC2(I)=0
    3 CONTINUE
      OREG=0
    8 CCNTINUE
    9 READ(5,10) REG,FOREST,DISTRT,SITE,KIND,SET,(NAME(I),I=1,7)
      IF (REG.EQ.99) GO TO 5Cb
   1C FORMAT(2X,3I2,I4,I3,I2,6A6,A5)
      DO 20I=1,12
      READ(5,22)(NOPERS(I,J),J=1,14)
   20 CONTINUE
   22 FORMAT(17X,4F5.0,9F4.0,F3.0)
      READ(5,24)(FAC1(I),I=1,7),(FAC2(J),J=1,7),ONIT,DATE
   24 FORMAT(17X,14F3.0,F5.0,9X,I6)
      DO 30 I=1,10
      READ(5,32)(CARS(I,J),J=1,18)
   30 CONTINUE
   32 FORMAT(17X,6(F2.0,F4.0,F4.0))
      READ(5,34)SET,TECH,FACGRP,NORODS,SAXLE
   34 FORMAT(15X,2I2,43X,F3.0,F1.0,F9.0)
      IF(KIND.EQ.411.OR.KIND.EQ.412.OR.KIND.EQ.431.OR.KIND.EQ.432)GO TO
     136
      GO TO 8
   36 TECH=TECH-10
      DO 40 I=1,38
      IF(DATE.EQ.CAL(I)) GO TO 50
   4C CONTINUE
C     ***WEEKDAY***
      NWD=NWD+1.
      DO 42 I=1,7
      WFAC1(I)=WFAC1(I)+FAC1(I)
      WFAC2(I)=WFAC2(I)+FAC2(I)
   42 CONTINUE
      IF LSET.EQ.99 )GO TO 60
      GO TO 8
C     ***HOLIDAY/WEEKENC***
   50 NHD=NHD+1.
```

```
      OO 52 I=1,7
      HFAC1(I)=HFAC1(I)+FAC1(I)
      HFAC2(I)=HFAC2(I )+FAC2(I)
 52   CONT I NUE
      IF ISET.EQ.99 )GO TO 60
      GO TO 8
 60   DO 62 I=1,7
      WFAC1(I)=WFAC1(I)/NWD
      WFAC2(I)=WFAC2(I )/NWD
      HFAC1(I)=HFAC1(I )/NHD
      HFAC2(I)=HFAC2(I )/NHD
      WPOC1 (I)= (WFAC1(I)/FACGRP )*100.
      WPOC2(I)= (WFAC2( I )/FACGRP )*100.
      HPOC1 (I)= (HFAC1(I)/FACGRP )*100.
      HPOC2(I)= (HFAC2( I)/FACGRP )*100.
 62   CONT INUE
      IF(REG.EQ.OREG.AND.FOREST.EQ.OFOR.AND.DISTRT.EQ.ODIS) GO TO 6    3
      OREG=REG
      OFOR=FOREST
      ODIS=DISTRT
      WRITE(6,94)
      NOSI TE=0
 63   IF(NOSITE.NE.0)GO TO 80
 6 4   WRITE( 6,66)
 66   FORMAT(1H1,30X,74HANALYSIS OF RECREATION USE DATA FOR SITES STATI S
     1TICALLY SAMPLEC IN CY 19691
      WRITE( 6,68)
 68   FORMAT(1H0,51X,31HCAMP ANO PICNIC UNIT OCCUPANCY*)
      NF=OREG*100+OFOR
      CALL GETSUB(FORST1,FORST3,NF,FSUB,200)
      ND=NF*100+ODIS
      CALL GETSUB(DISTR1,DISTR3,ND,DSUB,900)
      WRITE(6,70) OREG,OFOR,(FORST2(FSUB, I), I=1,4),ODIS,(DISTR2(DSUB,I) ,
     1I=1,4)
 70   FORMAT(1H0,20X,6HREGION,I3,3X,6HFOREST,I3,2X,3A6,A2,2X,8HDISTRICT,
     12X.1 3,2X,3A6,A2)
      WRITE( 6,721
 72   FORMAT(1H0,10X,18HSITE NAME ANO KIND,14X,8HSITE NO., 15X,48HOCCUPAN
     1CY OF UNITS AS RELATE0 TO DESIGN CAPACITY)
      WRITE( 6,74)
 74   FORMAT(1H0,63X,60HVACANT G E A R  BELOW WITHIN  D-25   2 5-75   OVE
     1R 7 5     TOTAL )
      WRITE( 6,76)
 7 6   FORMAT(1H ,71X,42HONLY LIMITS L I H I T S ABOVE  ABOVE   A BOVE)
 8 0   NK=KIND1(KIND)
      SNO=FLOAT(SITE/10)
      WRITE( 6,82)(NAME(I),I=1,6),SNO
 8 2   FORMAT(1H0,1X,6A6,3X,F9.1 )
      WRITE(6,83)(KIND2(NK,J),J=1,4),(KTECH(TECH,K),K=1,2)
 83   FORMAT(1H ,1X,3A6,A3,2A6)
      WRITEI 6,84)(WFAC1(I ),I=1,7),FACGRP
 84   FORMAT(1HO,25X,36HUNITS OCCUPIEO AVE. WEEKOAY      1215, F6.1 ,F7.1,
     1F6.1,3F8.1,2F10.1)
      WRITE( 6,861 (WPOC1(I ),I=1,7)
 8  6   FORMAT(1H ,25X,36HPERCENT OCCUPIED                     F6.1,F7.1,F6
     1.1 ,3F8.1,F10.1)
      WRITE( 6,88)(WFAC2(I),I=1,7)
 8  8   FORMAT(1H ,25X,36H                                    1815,F6.1,F7.1,F
     16.1,3F8.1 ,F10.1)
      WRITE( 6,86)(WPOC2(I ), I=1,7)
      WRITEI 6,90)(HFAC1(I ),I=1,7),FACGRP
 90   FORMAT(1H0,25X,36HUNITS OCCUPIED AVE.SAT/SUN/HOL  1215,F6.1,F7.1,F
```

```
     16.1,3F8.1,2F10.1)
      WRITE(6,86)(HPOC1(I ),I=1,7)
      WRITE( 6,88) (HFAC2(I ),I=1,7)
      WRITE( 6,861 (HPOC2(I),I=1,7)
      NOSITE=NOSITE+1
      IFtNOSITE.EQ.2) WRITE( 6,94)
   94 FORMAT(///70HO*THIS ANALYSIS FOR SAMPLE DAYS ONLY, NOT FOR THE ENT
     1IRE  SAMPLE SEASON)
      IF(NOSITE.EQ.2)NOSITE=0
      NWD=0
      NHD=0
      00 92 I=1,7
      WFAC1(I)=C
      WFAC2(I)=0
      HFAC1(I)=0
      HFAC2(I)=0
   92 CONTINUE
      GO TO 8
  500 STOP
      EN0
```

Appendix 2c

Listing of Program USPAT

```
PRDGRAM USPAT
      DIHENSION NAME(7),NOPERS(12,14),CAL(46),FORST1(2C0),FORST2(200,4),
     1DISTR1(900),DISTR2(900,4),KIND1(999),KIND2(60,6)
      DIHENSION KIND4(6C),KTECH(2,2)
     2 ,WPERS(13),HPERS(13),WPCAP(13),HPCAP(13),TMOFDA(12),CARS(10,18)
      OIMENSION FAC1(7),FAC2(7),
      INTEGER CAL,FOREST,DISTRT,REG,SITE,SET,TECH,DATE,FORST1,FORST2,
     1FORST3,DISTR1,DISTR2,DISTR3,FSUB,DSUB
      REAL NOPERS,NORODS,NWD,NHD,
      DATA TMOFDA(1)/6H 0915 /
      DATA TMOFDA(2)/6H 1015 /
      DATA TMOFDA(3)/6H 1115 /
      DATA TMOFDA(4)/6H 1215 /
      DATA TMOFDA(5)/6H 1315 /
      DATA TMOFDA(6)/6H 1415 /
      DATA TMOFDA(7)/6H 1515 /
      DATA TMOFDA(8)/6H 1615 /
      DATA TMOFDA(10)/6H 1815 /
      DATA TMOFDA(11)/6H 1915 /
      DATA TMOFDA(12)/6H 2015 /
      DATA TMOFDA(9)/6H 1715 /
      DATA (KTECH(1,I),I=1,2)/6HSINGLE,6HSITE/
      DATA (KTECH(2,I),I=1,2)/6HSITEC,6HOMPLEX/
      DO 2 I=1,38
      READ(5,1)CAL(I)
    1 FORMAT(I6 )
    2 CONTINUE
      CALL LOADAK(KIND1,KIND2,KIND3,KIND4)
      CALL FOR(FORST1,FORST2,FORST3)
      CALL DIST(DISTR1,DISTR2,DISTR3)
      NWD=0
      NHD=0
      DO 3 I=1,13
      WPERS(I)=0
      HPERS(I)=0
      WPCAP(I)=0
      HPCAP(I)=0
      WAVIS=O
      HAVIS=C
      WTOVIS=O
      HTOVIS=O
    3 CONTINUE
    8 CONTINUE
    9 READ(5,10)REG,FOREST,DISTRT,SITE,KIND,SET,(NAME(I),I=1,7)
      IF (REG.EQ.99 )GO TO 500
   10 FORMAT(2X,3I2,I4,I3,I2,6A6,A5)
      DO 20I=1,12
      READ(5,22)(NOPERS(I,J),J=1,14)
   20 CONTINUE
   22 FORMAT(17X,4F5.0,9F4.0,F3.0)
      READ(5,24)(FAC1(I),I=1,7),(FAC2(J),J=1,7),ONIT,DATE
   24 FORMAT(17X,14F3.0,F5.0,9X,I6)
      DO 30 I=1,10
      READ(5,32)(CARS(I,J),J=1,18)
   3C CONTINUE
   32 FCRMAT(17X,6(F2.0,F4.0,F4.0))
      READ(5,34)SET,TECH,FACGRP,NORODS,SAXLE,PAOT
   34 FORMAT(15X,2I2,43X,F3.0,F1.0,F9.0,2X,F3.0)
   11 TECH=TECH-10
      DO 40 I=1,46
      IF(DATE.EQ.CAL(I))GO TO 50
   40 CCNTINUE
```

Appendix 2c (continued)

```
C       ***WEEKDAY***
        NWD=NWD+1.
        DO 42 I=1,12
        DO 42 J=2,13
        WPERS(I)=WPERS(I)+NOPERS(I,J)
   42   CONTINUE
        WPERS(13)=WPERS(13)+ONIT
        IF (SET.EQ.99)GO TO 60
        GO TO 8
C       ***HOL/WKEND***
   50   NHD=NHD+1.
        DO 52 I=1,12
        DO 52 J=2,13
        HPERS(I)=HPERS(I)+NOPERS(I,J)
   52   CONTINUE
        HPERS(13)=HPERS(13)+ONIT
        IF (SET.EQ.99)GO TO 60
        GO TO 8
   60   CONTINUE
        FMULT=1.
        DO 62 I=1,13
        IF (I.EQ.13)FMULT=12.
        WTOVIS=WTOVIS+WPERS(I)*FMULT
        HTOVIS=HTOVIS+HPERS(I)*FMULT
        WPERS(I)=WPERS(I)/NWD
        HPERS(I)=HPERS(I)/NHD
        WPCAP(I)=(WPERS(I)/PAOT)*100.
        HPCAP(I)=(HPERS(I)/PAOT)*100.
   62   CONTINUE
        WAVIS=WTOVIS/NWD
        HAVIS=HTOVIS/NHD
        WRITE(6,70)
   70   FORMAT(1H1,33X,74HANALYSIS OF RECREATION USE DATA FOR SITES STATIS
       1TICALLY SAMPLED IN CY1969)
        WRITE(6,72)
   72   FORMAT(1H0,42X,51HAVERAGE NUMBER OF VISITORS RECORDED BY TIME OF D
       1AY*)
        NF=REG*100+FOREST
        CALL GETSUB (FORST1,FORST3,NF,FSUB,200)
        ND=NF*100+DISTRT
        CALL GETSUB(DISTR1,DISTR3,ND,DSUB,900)
        WRITE(6,74)REG,FOREST,(FORST2(FSUB,I),I=1,4),DISTRT,(DISTR2(DSUB,I
       1),I=1,4)
   74   FORMAT(1H0,22X,6HREGION,I3,9X,6HFOREST,I3,1X,3A6,A2,3X,8HDISTRICT,
       1I3,2X,3A6,A2)
        SNO=FLOAT(SITE)
        SNO=SNO/10.
        NK=KIND1(KIND)
        WRITE(6,76)SNO,(NAME(I),I=1,6),(KIND2(NK,J),J=1,4),(KTECH(TECH,K)
       1,K=1,2),PAOT
   76   FORMAT(1H0,8HSITE NO ,F6.1,2X,9HSITE NAME,2X,6A6,   9HSITE KIND,1X
       1,3A6,A3,2X,2A6,2X,14HCAPACITY(PAOT),F6.1)
        WRITE(6,78)
   78   FORMAT(1H0,30X,65HTIME OF           SITE USE IN TERMS OF NUMBER OF
       1 VISITORS PRESENT)
        WRITE(6,80)
   80   FORMAT(1H ,32X,76HDAY      AVE.WEEKDAY      PRCNT CAPACITY      AVE.W
       1KEND/HOL.      PRCNT CAPACITY )
        DO 82 I=1,12
        WRITE(6,83)TMOFDA(I),WPERS(I),WPCAP(I),HPERS(I),HPCAP(I)
   82   CONTINUE
   83   FORMAT(1H0,30X,A6,F14.1,F18.1,F18.1,F18.1)
```

```
      WRITE( 6,84)WPERS(13),WPCAP(13),HPERS(13),HPCAP(13)
   84 FORMAT(1H0,22X,17HOVERNIGHTCAMPERS,F11.1,F18.1,F18.1,F18.1)
      WRITE( 6,86)WAVIS,HAVIS
   86 FORMAT(1H0, 35HAVE.TOTAL VISITOR HRS/CALENDAR DAY,
     1                                    F15.1,21X,F15.1)
      WRITE( 6,88)
   88 FORMAT(//////////69H0*THIS ANALYSIS FOR SAHPLE DAYS ONLY, NOT FOR
     1THE WHOLE SPMPLE SEASON)
      DO 90 I=1,13
      WPERS(I)=0
      HPERSI I)=0
      WPCAPI I)=0
      HPCAP(I)=0
   90 CCNTINUE
      NWD=0
      NHO= 0
      WA VI S=0
      HAVI S=0
      WTOV IS=0
      HTOVIS=0
      CO TO 8
  500 STOP
      END
```

Appendix 2d

Listing of Program ORGIN

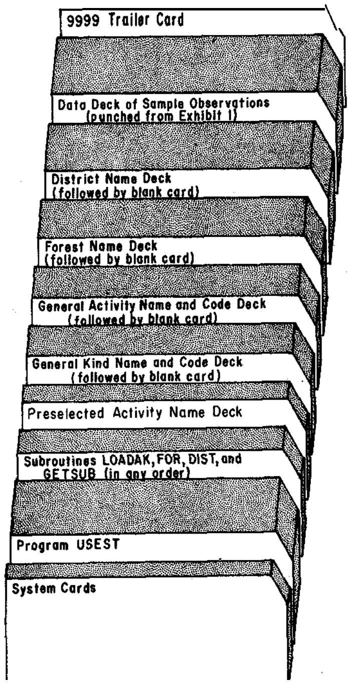
```
PROGRAM ORGIN
      DIMENSION NAME(7),NOPERS(12,14),CAL(38),FORST1(200),FORST2(200,4),
     1DISTR1(900),DISTR2(900,4),KIND1(999),KIND2(60,6)
      DIMENSION WORGIN(60,2),HORGIN(60,2),WTOT(2),HTOT(2),WAVE(60,2),
     1HAVE(60,2),WPCNT(60,2),HPCNT(60,2)
      DIMENSION STE(60,4)
      DIMENSION KIND4(60),KTECH(2,
     22),WPERS(13),HPERS(13),WPCAP(13),HPCAP(13),TMOFDA(12),CARS(10,18)
      DIMENSION FAC1(7),FAC2(7),
      INTEGER FOREST,DISTRT
      INTEGER REG,          SITE,SET,TECH,DATE,FORST1,FORST2,FORST3,DISTR
     11,DISTR2,DISTR3,FSUB,DSUB
      INTEGER CAL
      REAL NOPERS,NORODS,NWD,NHD,
      DATA TMOFDA(1)/6H0915 /
      DATA TMOFDA(2)/6H1015 /
      DATA TMOFDA(3)/6H1115 /
      DATA TMOFDA(4)/6H1215 /
      DATA TMOFDA(5)/6H1315 /
      DATA TMOFDA(6)/6H1415 /
      DATA TMOFDA(7)/6H1515 /
      DATA TMOFDA(8)/6H1615 /
      DATA TMOFDA(10)/6H1815 /
      DATA TMOFDA(11)/6H1915 /
      DATA TMOFDA(12)/6H2015 /
      DATA TMOFDA(9)/6H1715 /
      DATA (KTECH(1,I),I=1,2)/6HSINGLE,6H SITE/
      DATA (KTECH(2,I),I=1,2)/6HSITE C,6HOMPLEX/
      DO 2 I=1,38
      READ(5,1)CAL(I)
    1 FORMAT(I6)
    2 CONTINUE
      DO 6 I=1,60
      READ(5,5) NO,(STE(I,J),J=1,4)
    5 FORMAT(I2,3A6,A2)
      IF(NO.EQ.0) GO TO 7
    6 CONTINUE
    7 CONTINUE
      CALL LOADAK(KIND1,KIND2,KIND3,KIND4)
      CALL FOR(FORST1,FORST2,FORST3)
      CALL DIST(DISTR1,DISTR2,DISTR3)
      NWD=0
      NHD=0
      DO 3 I=1,13
      WPERS(I)=0
      HPERS(I)=0
      WPCAP(I)=0
      HPCAP(I)=0
      WAVIS=0
      HAVIS=0
      WTOVIS=0
      HTOVIS=0
    3 CONTINUE
    8 CONTINUE
    9 READ(5,10)REG,FOREST,DISTRT,SITE,KIND,SET,(NAME(I),I=1,7)
      IF(REG.EQ.99) GO TO 500
   10 FORMAT(2X,3I2,I4,I3,I2,6A6,A5)
      DO 20I=1,12
      READ(5,22)(NOPERS(I,J),J=1,14)
   20 CONTINUE
   22 FORMAT(17X,4F5.0,9F4.0,F3.0)
      READ(5,24)(FAC1(I),I=1,7),(FAC2(J),J=1,7),UNIT,DATE
```

```
24 FORMAT(17X,14F3.0,F5.0,9X,I6)
   DO 30 I=1,10
   READ(5,32)(CARS(I,J),J=1,18)
30 CONTINUE
32 FORMAT(17X,6(F2.0,F4.0,F4.0))
   READ(5,34)SET,TECH,FACGRP,NORODS,SAXLE,PAOT
34 FORMAT(15X,2I2,43X,F3.0,F1.0,F9.0,2X,F3.0)
11 TECH=TECH-10
   DO 40 I=1,38
   IF(DATE.EQ.CAL(I)) GO TO 50
40 CONTINUE
C     ***WEEKDAY***
   NWD=NWD+1.
   DO 44 I=1,10
   DO 44 J=1,16,3
   IF(CARS(I,J).EQ.0.) GO TO 44
   INDEX=CARS(I,J)
   DO 42 L=1,2
   JL=J+L
   WORGIN(INDEX,L)=WORGIN(INDEX,L)+CARS(I,JL)
42 CONTINUE
44 CONTINUE
   IF (SET.EQ.99 )GO TO 60
   GO TO 8
50 NHD=NHD+1.
   DO 54 I=1,10
   DO 54 J=1,16,3
   IF(CARS(I,J).EQ.0.) GO TO 54
   INDEX=CARS(I,J)
   DO 52 L=1,2
   JL=J+L
   HORGIN(INDEX,L)=HORGIN(INDEX,L)+CARS(I,JL)
52 CONTINUE
54 CONTINUE
   IF (SET.EQ.99 )GO TO 60
   GO TO 8
60 DO 64 I=1,53
   DO 64 J=1,2
   WAVE(I,J)=ABS(WORGIN(I,J)/NWD)
   HAVE(I,J)=ABS(HORGIN(I,J)/NHD)
   WTOT(J)=WTOT(J)+WAVE(I,J)
   HTOT(J)=HTOT(J)+HAVE(I,J)
64 CONTINUE
   DO 68 I=1,53
   DO 68 J=1,2
   WPCNT(I,J)=ABS((WAVE(I,J)/WTOT(J))*100.)
   HPCNT(I,J)=ABS((HAVE(I,J)/HTOT(J))*100.)
68 CONTINUE
   WRITE(6,70)
70 FORMAT(1H1,30X,74HANALYSIS OF RECREATION USE DATA FOR SITES STATIS
  1TICALLY SAMPLED IN CY 1969)
   WRITE(6,72)
72 FORMAT(1H0,54X,29HVEHICLES BY STATE OF ORIGIN *)
   NF=REG*100+FOREST
   ND=NF*100+DISTRT
   CALL GETSUB(FORST1,FORST3,NF,FSUB,200)
   CALL GETSUB(DISTR1,DISTR3,ND,DSUB,900)
   WRITE(6,74)REG,FOREST,(FORST2(FSUB,I),I=1,4),DISTRT,(DISTR2(DSUB,I
  1),I=1,4)
74 FORMAT(1H0,22X,6HREGION,I3,9X,6HFOREST,I3,1X,3A6,A2,3X,8HDISTRICT,
  1I3,2X,3A6,A2)
   SNO=FLOAT(SITE)
```

```
      SNO=SNO/10.
      NK=KIND1(KIND)
      WRITE(6,76)SNO,(NAME(I),I=1,6),(KIND2(NK,J),J=1,4),(KTECH(TECH,K),
     1K=1,2),PAOT
   76 FORMAT(1H0,4X,8HSITE NO , F6.1,2X,9HSITE NAME,1X,6A6,1X,9HSITE KIND
     1,1X,3A6,A3,1X,2A6,1X,14HCAPACITY(PAOT),F6.1)
      WRITE( 6,78)
   78 FORMAT(1H0,44X,8HWEEKDAYS,39X,15HWEEKEND/HOLIDAY)
      WRITE( 6,80)
   80 FORMAT(1H0,11X,58HSTATE NAME   AVE.NO.CARS TALLIED        PER CE
     1NT ALL CARS,10X,19HAVE.NO.CARS TALLIED,7X,17HPER CENT ALL CARS)
      WRITE( 6,82)
   82 FORMAT(1H ,29X,94HON SAMPLE OAYS        TALLIED ON SAMPLE DAYS
     1   ON SAMPLE DAYS          TALLIED ON SAMPLE DAYS)
      WRITE( 6,84)
   84 FORMAT(1H ,29X,4H1215,5X,4H1815,11X,4H1215,6X,4H1815,13X,4H1215,5X
     1,4H1815,11X,4H1215,6X,4H1815)
      WRITE( 6,85)
   85 FORMAT(1H0)
      DO 86 I=1,53
      IF(WAVE(I,1).EQ.0..AND.WAVE(I,2).EQ.0..AND.HAVE(I,1).EQ.0..AND.HAV
     1E(I,2).EQ.0.) GO TO 86
      WRITE( 6,88) (STE(I,J),J=1,4),(WAVE( I,K),K=1,2),(WPCNT(I,L),L=1,2),
     1(HAVE(I,M),M=1,2),(HPCNT( I,N),N=1,2)
   86 CONTINUE
   88 FORMAT(1H ,6X,3A6,A2,F7.1,F9.1,F15.1,F10.1,F17.1,F9.1,F15.1,F10.1)
      WRITE( 6,90)(WTOT(J),J=1,2),(HTOT(K),K=1,2)
   90 FORMAT(1H0,7X,14HTOT ALL STATES,F12.1,F9.1,12X,3H100,7X,3H100,F17.
     11,F9.1,12X,3H100,7X,3H100)
      WRITE( 6,92)
   92 FORMAT(///////69H0*THIS ANALYSIS FOR SAMPLE DAYS ONLY, NOT FOR THE
     1 WHOLE SAMPLE SEASON)
      NHD=0
      NWD=0
      DO 94 I=1,53
      DO 94 J=1,2
      WORGIN(I,J)=0
      HORGIN(I,J)=0
      WAVE(I,J)=0
      HAVE(I,J)=0
      WTOT (J)=0
      HTDT (J)=0
      WPCNT(I,J)=0
      HPCNT(I,J)=0
   94 CONTINUE
      GO TO 8
  400 STOP
      END
```

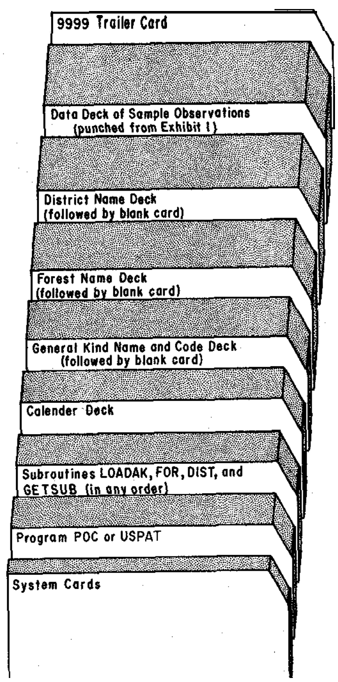
Appendix 3a

Deck Setup for
Program USEST



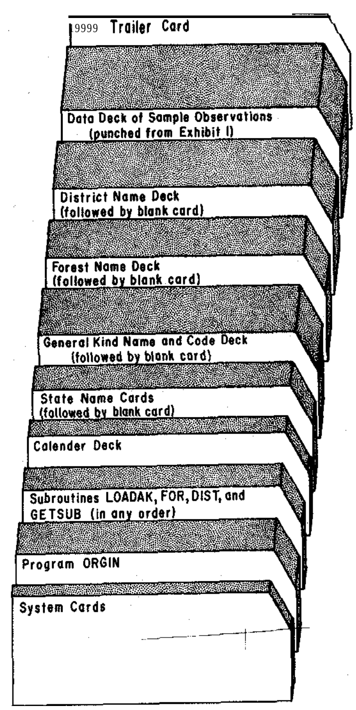
Appendix 3b

Deck Setup for
Programs POC
and USPAT



Appendix 3c

Deck Setup for
Program ORGIN



Appendix 4a

Listing of Subroutine LOADAK

```
      SUBROUTINE LOADAK(KODES,NAMES,NK,KLOD)
      DIMENSION KODES(999),NAMES(60,6),KLOD(60)
      DIHENSION NAME(6)
      DO 111I=1,900
  111 KODES(I)=0
      NK=0
    1 READ(5,2)KOD,NAME
    2 FORMAT(I3,6A6)
      IF(KOD.EQ.0)RETURN
      NK=NK+1
      KODES(KOD)=NK
      KLOC(NK)=KOD
      DO 3 I=1,6
    3 NAMES(NK,I)=NAME(I)
      GO TO 1
      END
```

Appendix 4b

Listing of Subroutine FOR

```
      SUEROUTINE FOR(KODES,NAMES,NK)
      DIHENSION KODES(200),NAMES(200,4)
      DIMENSION NAME(4 )
      DATA    IB/6H    /
      DO 5 I=1,200
      DO 5 J=1,4
    5 NAMES(I,J)=IB
      CALL EPASEIKODES (1),KODES(200))
      NK=0
    1 READ(5,2)N1,N2,NAME
    2 FORMAT(2I2,20X,3A6,A3)
      IF (N1.EQ.0)RETURN
      NK=NK+1
      KODES(NK)=N1*100+N2
      DO 3 I=1,4
    3 NAMES(NK,I)=NAME(I)
      GO TO 1
      END
```

Appendix 4c

Listing of Subroutine DIST

```
      SUBROUTINE DIST( KODES,NAMES,NK )
      DIMENSION KODES(9CO),NAMES(900,4)
      DIMENSION NAME(4 )
C     SUBROUTINE TO READ OISTRICT NAMES
      CALL ERASE(KODES (1),KODES(900))
      DATA IB/6H      /
      OO 5 I=1,900
      OC 5 J=1,4
    5 NAMES(I,J)=IB
      NK=0
    1 REA0 (5,2)N1,N2,N3,NAME
    2 FORMAT(3I2,54X,3A6,A2)
      IF (N1.EQ.0 )RETURN
      NK=NK+1
      KODES(NK)=N1*10000+N2*100+N3
      OO 3 I=1,4
    3 NAMES(NK,I )=NAME(I)
      GO TO 1
      END
```

Appendix 4d

Listing of Subroutine GETSUB

```
      SUBROUTINE GETSUB(KODES,NK,NPOINT,NSUB,NDEM)
      0 1 MENSION KOCES( NDEM)
C     SUBROUTINE TO GET SUBSCRIPT FOR FOREST,DISTRICT,COUNTY
      IF (KODES(NSUB).EQ.NPOINT)RETURN
      OO 1 I=1,NK
      NSUB= I
      IF (KODES(NSUB).EQ.NPOINT )RETURN
    1 CONTINUE
      NSUB=NK+I
      RETURN
      EN0
```

Appendix 5a

Formats for Data from Daily Sampling Record

Card Ident. 1

Field	Card columns
Card No.	1–2
Region No.	3–4
Forest No.	5–6
Dist. No.	7–8
Principal Site No.	9–12
Principal Site Kind	13–15
Set No.	16–17
Principal Site Name	18–58
Station No. 1 24-hr. Diff.	59–63
Station No. 2 24-hr. Diff.	64–68
Station No. 3 24-hr. Diff.	69–73
Station No. 4 24-hr. Diff.	74–78
(crossed out)	79–80

Card Ident. 2–13

Field	Card columns
	1–2
	3–4
	5–6
	7–8
	9–12
	13–15
	16–17
Visits	18–22
Picnicking	23–27
Camping	28–32
Team Sports	33–37
Swimming & Bathing	38–41
Water Sports	42–45
Powerboat Launching	46–49
Non-powerboat Launching	50–53
Spectator Sports	54–57
Exhibits, Talks	58–61
Tours	62–65
View Scenery	66–69
Other Activity Use	70–73
Other Activity Code	74–76
(crossed out)	77–80

Card Ident. 14

Field	Card columns
	1–2
	3–4
	5–6
	7–8
	9–12
	13–15
	16–17
1215 Facility Groups Vacant	18–20
1215 Gear Only	21–23
1215 Below Lower Limit	24–26
1215 Within Limits	27–29
1215 25% Above	30–32
1215 25-75% Above	33–35
1215 +75% Above	36–38
1815 Facility Groups Vacant	39–41
1815 Gear Only	42–44
1815 Below Lower Limit	45–47
1815 Within Limits	48–50
1815 25% Above	51–53
1815 25-75% Above	54–56
1815 +75% Above	57–59
Number Overnight Campers	60–64
Overnight Equip. in use: Auto	65–67
Overnight Equip. in use: Tent	68–70
Overnight Equip. in use: Trailer	71–73
Date: Month	74–75
Date: Day	76–77
Date: Year	78–79
(crossed out)	80

Card Ident. 15–24

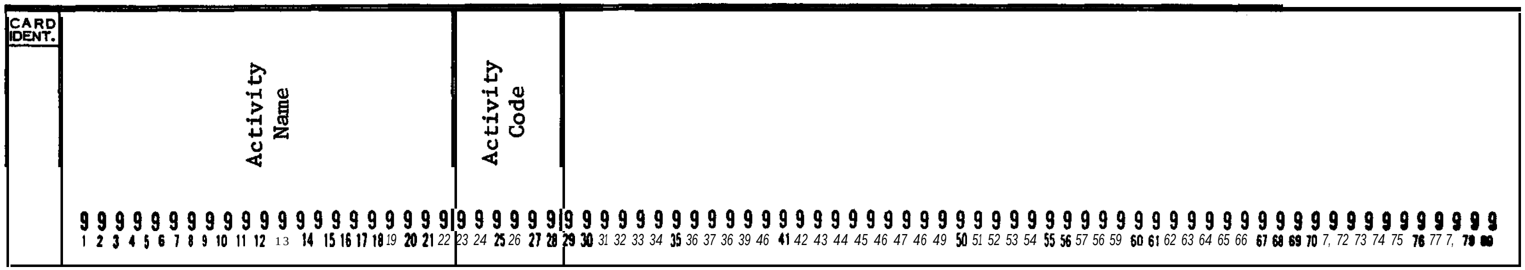
Field	Card columns
	1–2
	3–4
	5–6
	7–8
	9–12
	13–15
	16–17
State No.	18–19
Number Vehicles 1215	20–23
Number Vehicles 1815	24–27
State No.	28–29
Number Vehicles 1215	30–33
Number Vehicles 1815	34–37
State No.	38–39
Number Vehicles 1215	40–43
Number Vehicles 1815	44–47
State No.	48–49
Number Vehicles 1215	50–53
Number Vehicles 1815	54–57
State No.	58–59
Number Vehicles 1215	60–63
Number Vehicles 1815	64–67
State No.	68–69
Number Vehicles 1215	70–73
Number Vehicles 1815	74–77
(crossed out)	78–80

Card Ident. 25

Field	Card columns
	1–2
	3–4
	5–6
	7–8
	9–12
	13–15
	16–17
Samp. Tech.	18–19
Other Sites Included if a Complex: Number	20–23
Other Sites Included if a Complex: Kind	24–26
Other Sites Included if a Complex: Number	27–30
Other Sites Included if a Complex: Kind	31–33
Other Sites Included if a Complex: Number	34–37
Other Sites Included if a Complex: Kind	38–40
Other Sites Included if a Complex: Number	41–44
Other Sites Included if a Complex: Kind	45–47
Season Calibrated: Begin Month	48–49
Season Calibrated: Begin Day	50–51
Season Calibrated: Begin Year	52–53
Season Calibrated: End Month	54–55
Season Calibrated: End Day	56–57
Season Calibrated: End Year	58–59
Season Calibrated: Total Days	60–62
Total Number Facility Groups	63–65
Entrances	66
Total Seasonal Metered Count	67–75
(crossed out)	76–80

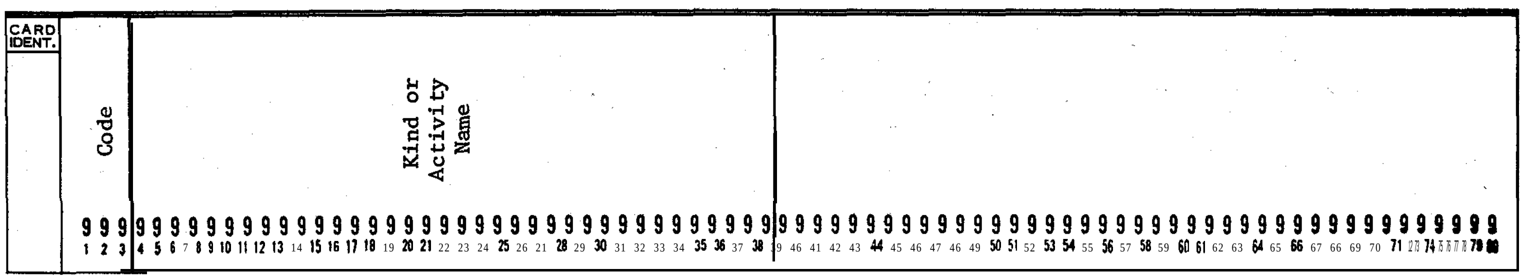
Appendix 5b

Format for Selected Activity Name and Code Deck



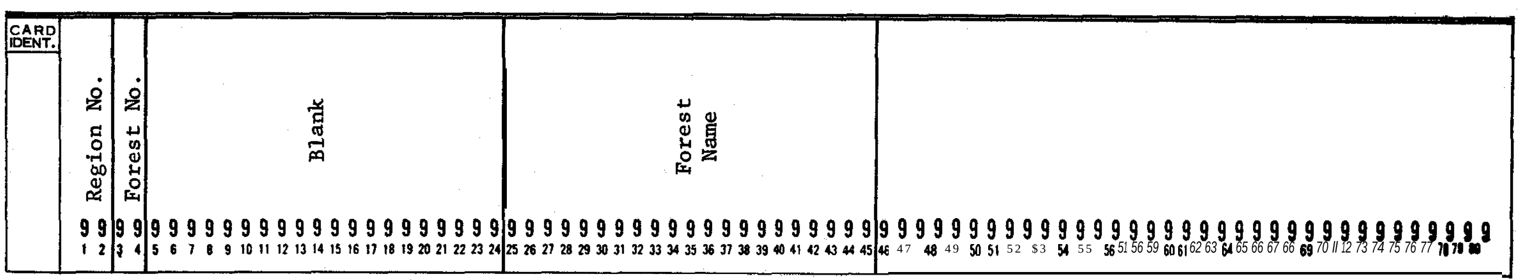
Appendix 5c

Format for General Activity and Kind Name Decks



Appendix 5d

Format for Forest Name Deck



Appendix 5e

Format for District Name Deck

CARD IDENT.	Region No.	Forest No.	District No.	Blank	District Name
	9 9	9 9	9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
	1 2	3 4	5 6	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

Appendix 5f

Format for Calendar Deck

CARD IDENT.	Month	Day	Year	
	9 9	9 9	9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
	1 2	3 4	5 6	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

Appendix 5g

Format for State Name Deck

CARD IDENT.	State No.	State Name	
	9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
	1 2	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

*U.S. G.P.O.: 1973—747-894/1409, Region No. 4

Tyre, Gary L., and Welch, Gene R.
1972. Program manual for estimating use and related statistics on developed recreation sites. Southeast. For. Exp. Stn., USDA For. Serv. Gen. Tech. Rep. SE-1, 44 pp.

This manual includes documentation of four computer programs supporting subroutines for estimating use, visitor origin, patterns of use, and occupancy rates at developed recreation sites. The programs are written in Fortran IV and should be easily adapted to any computer arrangement having the capacity to compile this language.

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